

State/Industry Ambient Monitoring Network

Air Quality Report

2nd Quarter 2004 (Revised)

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SECTION ONE

DISCUSSION OF MONITORING RESULTS

Sulfur Dioxide (SO₂)

There were no exceedances of the federal standards during the quarter. There was an exceedance of the State 1-hour standard. The maximum 1-hour concentration was 322 ppb on May 3 at Amerada Hess - Tioga #3; the maximum 3-hour concentration was 134 ppb on May 3 at Amerada Hess - Tioga #3; and, the maximum 24-hour concentration was 30 ppb on June 21 at Mandan - SPM. The highest arithmetic mean is 5.7 ppb at Mandan - SPM All sites except TRNP - SU (Painted Canyon) achieved at least an 80% data recovery for the period.

According to Amerada Hess's Quarterly Excess Emission Report covering May 3, 2004; there was one event that morning which may have contributed to the elevated SO₂ levels registered at Site #3. From 0600 to 1000 the plant was depressurizing the high pressure inlet pipeline to perform maintenance on the pipeline. This resulted in 676 mcf of 6% H₂S gas being flared (1741 lbs SO₂/hr).

TRNP-SU(Painted Canyon) failed to achieve 80% data recovery due to data acquisition system hardware problems.

Sulfur Dioxide (SO₂) 5-Minute Average

The maximum 5-minute concentration was 485 ppb on May 3 at Bear Paw - MGP #5.

TRNP-SU(Painted Canyon) failed to achieve 80% data recovery due to data acquisition system hardware problems.

Ozone (O₃)

There was no exceedance of the ozone standard during the quarter. The highest observed 1-hour concentration was 68 ppb on May 18 at Fargo-NW. The highest 4th highest 8-hour concentration was 56 ppb on April 5 at TRNP-NU, April 6 at Fargo NW and June 3 at Lostwood NWR. All sites except TRNP - SU (Painted Canyon) achieved at least an 80% data recovery for the period.

TRNP-SU(Painted Canyon) failed to achieve 80% data recovery due to data acquisition system hardware problems.

Nitrogen Dioxide (NO₂)

The maximum arithmetic mean concentration was 5.9 ppb on at Fargo NW. All sites achieved at least an 80% data recovery for the period operated.

Ammonia (NH_3)

The highest 1-hour concentration was 93.6 ppb on May 5 at Beulah North . The site achieved at 80% data recovery for the period.

The data is used as part of the ambient data input used by the newer dispersion models.

Inhalable Continuous PM_{2.5} Particulates

There was no exceedance of the 24-hour standard during the quarter. The highest 1-hour concentration was 68.1 $\mu\text{g}/\text{m}^3$ on April 30 at Beulah North. The highest 24-hour concentration was 14.3 $\mu\text{g}/\text{m}^3$ on May 5 at Fargo-NW. The highest arithmetic mean concentration was 5.9 $\mu\text{g}/\text{m}^3$ at Hannover. All sites except TRNP - SU (Painted Canyon) achieved at least an 80% data recovery for the period operated..

TRNP-SU(Painted Canyon) failed to achieve 80% data recovery due to data acquisition system hardware problems.

Inhalable PM_{2.5} Particulates

There was no exceedance of the 24-hour standard during the quarter. The highest 24-hour average concentration was 11.5 $\mu\text{g}/\text{m}^3$ on May 15 at Fargo NW. The highest arithmetic mean was 5.5 $\mu\text{g}/\text{m}^3$ at Fargo NW. All sites achieved at least an 80% data recovery for the period.

Inhalable Continuous PM₁₀ Particulates

There was no exceedance of the 24-hour standard during the quarter. The highest 1-hour concentration was 310.4 $\mu\text{g}/\text{m}^3$ on April 28 at Lostwood NWR. The maximum 24-hour concentration was 73 $\mu\text{g}/\text{m}^3$ on April 24 at Lostwood NWR. The highest arithmetic mean was 31.5 $\mu\text{g}/\text{m}^3$ at Fargo NW. The site achieved at 80% data recovery for the period.

Inhalable PM₁₀ Particulates

There was no exceedance of the 24-hour standard during the quarter. The maximum 24-hour average concentration was 39 $\mu\text{g}/\text{m}^3$ on May 3 at Fargo NW. The highest arithmetic mean was 15.5 $\mu\text{g}/\text{m}^3$ at Fargo NW. All sites achieved at least an 80% data recovery for the period.

SECTION TWO

AMBIENT AIR QUALITY DATA

SUMMARIES

COMPARISON OF AIR QUALITY DATA WITH
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS *

POLLUTANT : Sulfur Dioxide (ppb)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	1 - HOUR		M	A	X	I	M	A	24 - HOUR		ARITH MEAN	1HR #>273	24HR #>99	% >MDV
				1ST MM/DD:HH	2ND MM/DD:HH	1ST MM/DD:HH	3RD MM/DD:HH	2ND MM/DD:HH		1ST MM/DD	2ND MM/DD	1ST MM/DD	2ND MM/DD				
Amerada Hess - Tioga #1	2004	APR-JUN	2158	191 05/03:05	74 05/05:05	67 05/03:05	57 05/04:11		11 05/04	10 05/03				1.7			13.0
Amerada Hess - Tioga #3	2004	APR-JUN	2161	322 05/03:09	107 05/31:23	134 05/03:11	62 05/31:23		22 05/03	14 06/17				3.4	1		25.7
Bear Paw - MGP #3	2004	APR-JUN	2160	20 06/04:13	7 06/04:12	9 06/04:14	4 05/10:20		2 06/04	2 04/14				1.1			3.9
Bear Paw - MGP #5	2004	APR-JUN	2163	48 05/18:09	17 05/18:08	22 05/18:11	6 05/18:08		4 05/18	2 04/14				1.1			4.1
Beulah - North	2004	APR-JUN	2172	41 05/20:09	40 05/20:08	24 05/20:08	17 04/05:08		7 05/20	6 04/14				2.1			24.3
DGC #12	2004	APR-JUN	2171	40 06/29:09	39 06/09:18	20 06/29:11	15 06/10:02		5 06/09	5 05/20				1.8			20.3
DGC #14	2004	APR-JUN	2166	32 05/27:17	32 06/04:10	20 06/04:11	17 05/27:17		5 06/09	5 04/17				1.7			15.5
DGC #16	2004	APR-JUN	2170	90 04/23:12	36 05/02:12	43 04/23:14	21 06/04:11		8 04/23	8 05/20				1.8			16.5
DGC #17	2004	APR-JUN	2170	35 05/20:08	30 04/02:00	19 04/02:02	19 05/20:08		8 05/20	7 06/09				1.7			18.9
Dunn Center	2004	APR-JUN	2163	11 05/16:06	11 06/09:06	9 06/09:08	8 05/16:08		4 06/09	3 04/14				1.2			8.0
Fargo NW	2004	APR-JUN	2165	4 06/04:21	3 04/01:19	2 04/01:20	2 06/04:23		1 04/01	1 06/04				1.0			1.2
Hannover	2004	APR-JUN	2177	84 04/02:10	66 04/02:09	53 04/02:11	27 06/04:11		9 04/02	7 06/04				2.1			18.6
Lostwood NWR	2004	APR-JUN	2142	11 05/09:20	11 06/25:09	8 06/25:11	7 05/09:20		3 06/21	2 06/18				1.2			8.9
Mandan - SPM	2004	APR-JUN	2169	103 06/07:01	98 04/24:17	79 06/07:02	73 04/24:20		30 06/21	25 04/25				5.7			37.0

COMPARISON OF AIR QUALITY DATA WITH
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS *

POLLUTANT : Sulfur Dioxide (ppb)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	1 - HOUR		3 - HOUR		24 - HOUR		ARITH MEAN	1HR #>273	24HR #>99	% >MDV
				1ST MM/DD:HH	2ND MM/DD:HH	1ST MM/DD:HH	2ND MM/DD:HH	1ST MM/DD	2ND MM/DD				
Mandan NW - SPM	2004	APR-JUN	2172	85 06/06:07	74 05/18:21	44 05/28:08	44 06/06:08	21 05/28	16 04/01	3.5			31.8
TRNP - NU	2004	APR-JUN	2169	29 05/18:07	24 05/18:06	20 05/18:08	8 05/06:08	4 06/09	3 05/18	1.1			4.7
TRNP - SU (Painted Canyon)	2004	APR-JUN	820	6 06/02:12	5 06/25:00	4 06/30:20	3 06/02:14	2 06/30	2 06/06	1.1			3.0

The maximum 1-hour concentration is 322 ppb at Amerada Hess - Tioga #3 on 05/03:09

The maximum 3-hour concentration is 134 ppb at Amerada Hess - Tioga #3 on 05/03:11

The maximum 24-hour concentration is 30 ppb at Mandan - SPM on 06/21

The highest arithmetic mean is 5.7 ppb at Mandan - SPM

* The air quality standards are:

STATE Standards -

- 1) 273 ppb maximum 1-hour average concentration.
- 2) 99 ppb maximum 24-hour average concentration.
- 3) 23 ppb maximum annual arithmetic mean concentration.

FEDERAL Standards -

- 1) 500 ppb maximum 3-hour concentration not to be exceeded more than once per year.
- 2) 140 ppb maximum 24-hour concentration not to be exceeded more than once per year.
- 3) 30 ppb annual arithmetic mean.

*** Less than 80% of the possible samples (data) were collected.

COMPARISON OF AIR QUALITY DATA WITH
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS *

POLLUTANT : Sulfur Dioxide 5-Minute Averages (ppb)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	5 - M I N U T E			M A X I M A			# HOURS >600	% >MDV
				1ST DATE MM/DD:HH	2ND DATE MM/DD:HH	3RD DATE MM/DD:HH					
Amerada Hess - Tioga #1	2004	APR-JUN	2158	398 05/03:05	250 05/05:05	237 05/04:12				0	21.9
Amerada Hess - Tioga #3	2004	APR-JUN	2161	485 05/03:09	194 05/03:10	192 05/05:21				0	60.2
Bear Paw - MGP #3	2004	APR-JUN	2160	141 06/04:13	81 06/04:12	23 06/29:14				0	8.6
Bear Paw - MGP #5	2004	APR-JUN	2163	115 05/18:09	97 05/18:08	94 05/18:10				0	12.6
Beulah - North	2004	APR-JUN	2172	81 04/30:12	72 04/30:15	70 06/29:08				0	35.5
Dunn Center	2004	APR-JUN	2164	26 05/16:06	18 05/16:07	17 06/09:06				0	17.9
Fargo NW	2004	APR-JUN	2165	17 06/28:16	11 04/24:04	8 05/05:01				0	4.2
Hannover	2004	APR-JUN	2177	323 04/02:08	153 04/02:10	102 04/02:09				0	28.5
Lostwood NWR	2004	APR-JUN	2142	21 06/18:08	19 05/30:09	19 06/25:09				0	15.2
Mandan - SPM	2004	APR-JUN	2169	195 04/25:15	177 04/25:18	176 04/24:17				0	50.8
Mandan NW - SPM	2004	APR-JUN	2172	183 05/27:11	169 06/06:07	156 06/06:06				0	42.4
TRNP - NU	2004	APR-JUN	2169	44 05/18:07	42 05/28:10	32 05/18:06				0	7.3
TRNP - SU (Painted Canyon)	2004	APR-JUN	820 ***	15 06/25:00	14 06/24:23	8 06/16:23				0	9.5

The maximum 5-minute concentration is 485 ppb at Amerada Hess - Tioga #3 on 05/03:09

* No Standard is currently in effect

*** Less than 80% of the possible samples (data) were collected.

COMPARISON OF AIR QUALITY DATA WITH
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS *

POLLUTANT : Ozone (ppb)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	1 - HOUR		A	X	I	M	A	8 - HOUR		4TH MM/DD	1HR #>120	8HR #>80
				1ST MM/DD	2ND MM/DD	1ST MM/DD	2ND MM/DD	3RD MM/DD	4TH MM/DD	1HR #>120					
Beulah - North	2004	APR-JUN	2172	60 06/05	59 05/17	57 06/05	54 06/06	53 05/17	52 04/05						
Dunn Center	2004	APR-JUN	2171	56 06/05	55 05/17	55 06/05	51 06/06	51 05/17	51 04/05						
Fargo NW	2004	APR-JUN	2168	68 05/18	63 05/08	64 05/18	56 06/07	56 06/06	56 04/06						
Hannover	2004	APR-JUN	2175	58 06/05	54 04/05	55 06/05	51 04/06	51 06/06	50 04/05						
Lostwood NWR	2004	APR-JUN	2139	62 06/22	62 06/05	60 06/05	59 05/18	58 05/17	56 06/03						
TRNP - NU	2004	APR-JUN	2169	67 06/05	62 05/17	65 06/05	58 06/06	57 05/17	56 04/05						
TRNP - SU (Painted Canyon)	2004	APR-JUN	823	63 *** 06/30	62 06/05	62 06/05	57 06/30	55 06/06	54 06/03						

The highest 1-hour concentration is 68 ppb at Fargo NW on 05/18

The 4th highest 8-hour concentration is 56 ppb at TRNP - NU on 04/05, Fargo NW on April 6 and Lostwood NWR on June 3

* The air quality standards for ozone are:
STATE - 120 ppb not to be exceeded more than once per year.

FEDERAL - Fourth highest daily maximum 8-hour averages for a 3-year period not to exceed 80 ppb.

*** Less than 80% of the possible samples (data) were collected.

COMPARISON OF AIR QUALITY DATA WITH
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS *

POLLUTANT : Nitrogen Dioxide (ppb)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	M A X I M A		ARITH MEAN	% >MDV
				1ST MM/DD:HH	2ND MM/DD:HH		
Beulah - North	2004	APR-JUN	2165	25 04/05:21	20 05/17:19	2.7	90.7
DGC #12	2004	APR-JUN	2135	46 04/05:21	30 04/05:22	2.8	96.0
DGC #17	2004	APR-JUN	1760	21 05/08:22	16 06/25:21	2.1	98.1
Dunn Center	2004	APR-JUN	2155	11 05/17:23	11 05/18:00	2.1	97.7
Fargo NW	2004	APR-JUN	2159	47 05/02:22	47 05/18:20	5.9	97.6
Hannover	2004	APR-JUN	2169	26 04/01:22	26 04/01:23	2.2	93.5
Lostwood NWR	2004	APR-JUN	2134	9 05/09:20	7 04/16:07	1.4	94.3
TRNP - NU	2004	APR-JUN	2163	7 06/09:07	6 06/09:22	1.3	98.2

The maximum arithmetic mean concentration is 5.9 ppb at Fargo NW

* The air quality standards are:
STATE - 53 ppb maximum annual arithmetic mean.

FEDERAL - 53 ppb annual arithmetic mean.

COMPARISON OF AIR QUALITY DATA WITH
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS *

POLLUTANT : Ammonia (ppb)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	M	A	X	I	M	A
				1ST MM/DD:HH	2ND MM/DD:HH	3RD MM/DD:HH	4TH MM/DD:HH	5TH MM/DD:HH	6TH MM/DD:HH
Beulah - North	2004	APR-JUN	2156	93.6 04/05:07	92.3 06/01:01	81.5 04/24:22	78.3 05/31:21	72.8 06/01:04	68.4 05/04:07

* No standard is currently in effect.

COMPARISON OF AIR QUALITY DATA WITH
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS *

POLLUTANT : Inhalable Continuous PM_{2.5} Particulates ($\mu\text{g}/\text{m}^3$)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	M	A	X	I	M	A	24	-	HOUR	24	-	HOUR	ARITH	24HR	#>65	AM>15
				1ST MM/DD:HH	2ND MM/DD:HH	1ST MM/DD	2ND MM/DD	3RD MM/DD	4TH MM/DD	MEAN									
Beulah - North	2004	APR-JUN	2172	68.1 04/30:16	43.1 04/28:09	11.3 04/28	9.1 05/08	8.7 05/13	8.7 04/30	5.5									
Fargo NW	2004	APR-JUN	2175	67.9 05/05:07	61.6 05/05:08	14.3 05/05	10.3 04/28	9.8 05/08	7.9 04/15	3.4									
Hannover	2004	APR-JUN	2170	38.6 05/08:17	33.9 04/28:09	12.0 04/28	10.2 05/08	8.7 04/10	8.6 04/25	5.9									
Lostwood NWR	2004	APR-JUN	2141	28.8 04/28:07	26.5 06/02:19	6.2 04/28	5.3 06/06	5.3 05/08	5.1 04/24	2.4									
TRNP - NU	2004	APR-JUN	2171	45.9 04/28:07	32.9 05/08:19	10.8 04/28	9.6 05/08	9.0 05/20	8.5 04/18	4.9									
TRNP - SU (Painted Canyon)	2004	APR-JUN	824	31.9 ***	21.6 06/11:13	7.4 06/26	7.1 06/05	7.0 06/28	6.9 06/29	5.2									

The highest 24-hour concentration is 14.3 $\mu\text{g}/\text{m}^3$ at Fargo NW on 05/05
The highest arithmetic mean concentration is 5.9 $\mu\text{g}/\text{m}^3$ at Hannover

* The ambient air quality standards are:

FEDERAL Standards -

- 1) 24-hour: 3-year average of 98th percentiles not to exceed 65 $\mu\text{g}/\text{m}^3$.
- 2) Annual: 3-year average not to exceed 15 $\mu\text{g}/\text{m}^3$.

*** Less than 80% of the possible samples (data) were collected.

COMPARISON OF AIR QUALITY DATA WITH
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS *

POLLUTANT : Inhalable PM_{2.5} Particulates ($\mu\text{g}/\text{m}^3$)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	MIN	M A X I M A			ARITH MEAN	#> 65	AM>15	% >MDV
					1ST MM/DD	2ND MM/DD	3RD MM/DD				
Beulah - North	2004	APR-JUN	15	2.5	8.0 04/15	7.3 04/09	6.3 05/21	5.2			100.0
Bismarck Residential	2004	APR-JUN	29	1.3	7.0 04/06	6.6 06/29	6.5 04/15	4.3			96.6
Fargo NW	2004	APR-JUN	29	2.0	11.5 05/15	10.8 05/09	10.5 04/15	5.5			100.0
TRNP - NU	2004	APR-JUN	11	2.0	6.6 05/21	6.0 04/03	5.8 06/02	4.5			100.0
TRNP - SU (Painted Canyon)	2004	APR-JUN	15	2.9	6.4 05/21	5.8 04/27	5.2 04/09	4.3			100.0

The highest 24-hour concentration is 11.5 $\mu\text{g}/\text{m}^3$ at Fargo NW on 05/15

The highest arithmetic mean concentration is 5.5 $\mu\text{g}/\text{m}^3$ at Fargo NW

* The ambient air quality standards are:

FEDERAL Standards -

- 1) 24-hour: 3-year average of 98th percentiles not to exceed 65 $\mu\text{g}/\text{m}^3$.
- 2) Annual: 3-year average not to exceed 15 $\mu\text{g}/\text{m}^3$.

COMPARISON OF AIR QUALITY DATA WITH
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS *

POLLUTANT : Inhalable Continuous PM₁₀ Particulates ($\mu\text{g}/\text{m}^3$)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	M A X I M A		24 - HOUR		4TH MM/DD	ARITH MEAN	24HR #>150	AM>50
				1ST MM/DD:HH	2ND MM/DD:HH	1ST MM/DD	2ND MM/DD				
Fargo NW	2004	JUN-JUN	56	92.0 06/29:22	58.0 06/28:21	33.0 06/30	28.8 06/29			31.5	
Lostwood NWR	2004	APR-JUN	2144	310.4 04/28:07	275.4 04/24:23	73.0 04/24	59.7 04/25	42.3 04/28	41.7 06/29	13.3	
TRNP - NU	2004	JUN-JUN	350	29.0 06/16:10	27.0 06/30:14	11.0 06/29	9.7 06/25	9.7 06/26	9.0 06/22	9.0	

The maximum 24-hour concentration is 73.0 $\mu\text{g}/\text{m}^3$ at Lostwood NWR on 04/24
The highest annual mean concentration is 31.5 $\mu\text{g}/\text{m}^3$ at Fargo NW

* The STATE and FEDERAL air quality standards are:

- 1) 150 $\mu\text{g}/\text{m}^3$ maximum averaged over a 24-hour period with no more than one expected exceedance per year.
- 2) 50 $\mu\text{g}/\text{m}^3$ expected annual arithmetic mean.

COMPARISON OF AIR QUALITY DATA WITH
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS *

POLLUTANT : Inhalable PM₁₀ Particulates ($\mu\text{g}/\text{m}^3$)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	MIN	M A X I M A			ARITH MEAN	#>150	AM>50	% >MDV
					1ST MM/DD	2ND MM/DD	3RD MM/DD				
Bismarck Residential	2004	APR-JUN	15	7.0	25.0 05/03	18.0 05/09	15.0 06/26	11.9		100.0	
Fargo NW	2004	APR-JUN	30	4.0	39.0 05/03	31.0 04/15	28.0 06/29	15.5		100.0	
TRNP - NU	2004	APR-JUN	14	5.0	30.0 05/03	15.0 04/15	12.0 05/21	10.1		100.0	

The maximum 24-hour concentration is 39.0 $\mu\text{g}/\text{m}^3$ at Fargo NW on 05/03
The highest annual mean concentration is 15.5 $\mu\text{g}/\text{m}^3$ at Fargo NW

* The STATE and FEDERAL air quality standards are:

- 1) 150 $\mu\text{g}/\text{m}^3$ maximum averaged over a 24-hour period with no more than one expected exceedance per year.
- 2) 50 $\mu\text{g}/\text{m}^3$ expected annual arithmetic mean.

SECTION THREE

EXCEEDANCE LISTINGS

By Site Date Hour

All Units Are in Parts Per Billion Except Wind Direction (Degrees),
Wind Speed (MPH), CO (PPM), and PM_{2.5} and PM₁₀ ($\mu\text{g}/\text{m}^3$)

The * Identifies the Exceedances

----- SITE=Amerada Hess - Tioga #3 -----														
date	HOUR	1-HOUR SO2	3-HOUR SO2 BLOCK	24-HOUR SO2 BLOCK	5-MIN SO2 MAX	NO2	O3	WS	WD	CONT. PM25	FRM25	CONT. PM10	PM10	
May 3, 2004	0900	322*				485			29.9	316				

By Date Hour Site

All Units Are in Parts Per Billion Except Wind Direction (Degrees),
Wind Speed (MPH), CO (PPM), and PM_{2.5} and PM₁₀ ($\mu\text{g}/\text{m}^3$)

The * Identifies the Exceedances

----- date=May 3, 2004 -----														
SITE	HOUR	1-HOUR SO2	3-HOUR SO2 BLOCK	24-HOUR SO2 BLOCK	5-MIN SO2 MAX	NO2	O3	WS	WD	CONT. PM25	FRM25	CONT. PM10	PM10	
Amerada Hess - Tioga #3	0900	322*				485			29.9	316				